1. What does Cable Modem mean?

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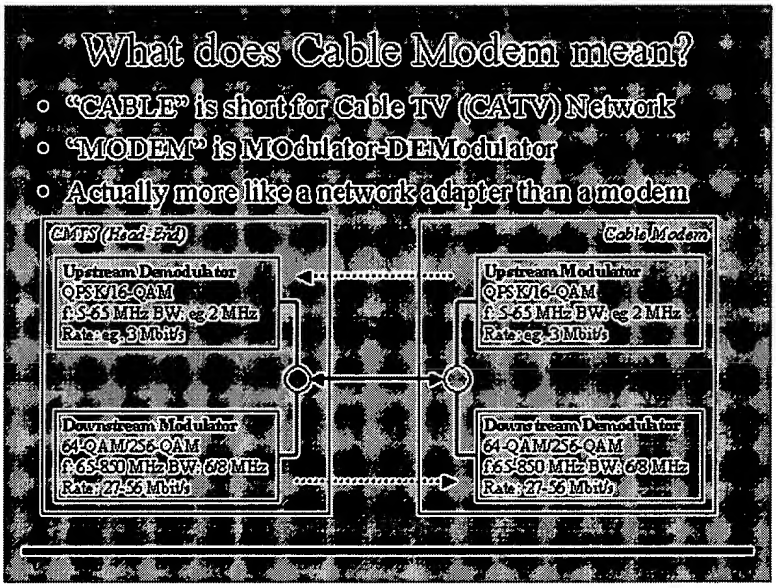

The term "Cable Modem" is quite new and refers to a modem that operates over the ordinary cable TV network cables. Basically you just connect the Cable Modem to the TV outlet for your cable TV, and the cable TV operator connects a Cable Modem Termination System (CMTS) in his end (the Head-End).

Actually the term "Cable Modem" is a bit misleading, as a Cable Modem works more like a Local Area Network (LAN) interface than as a modem.

Other terms

A short list of some of the other technical terms and acronyms that you may stumble across in trying to understand the cable modem world.

CATV: Community Antenna Television or Cable TV system.

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Can be all coaxial or HFC (Hybrid Fiber Coax) based.

Cable modem (CM): Client device for providing data over a cable TV network. Read all about it here.

Channel: A specific frequency and bandwidth combination. Used in this context about TV channels for television services and downstream data for cable modems.

CMTS: Cable Modem Termination System. Central device for connecting the cable TV network to a data network like the internet. Normally placed in the headend of the cable TV system.

CPE: Customer Premises Equipment. Used to describe the PC and/or other equipment, that the customer may want to connect to the cable modem.

DHCP: Dynamic Host Configuration Protocol. This protocol provides a mechanism for allocating IP addresses dynamically so that addresses can be reused. Often used for managing the IP addresses of all the cable modems in a cable plant and the PC's connected to the cable modems.

DOCSIS: Data Over Cable Service Interface Specification. The dominating cable modem standard. Defines technical specifications for both cable modem and CMTS.

Downstream: The data flowing from the CMTS to the cable modem.

Downstream frequency: The frequency used for transmitting data from the CMTS to the cable modem. Normally in the 42/65-850 MHz range depending on the actual cable plant capabilities.

Headend: Central distribution point for a CATV system. Video signals are received here from satellites and maybe other sources, frequency converted to the appropriate channels, combined with locally originated signals, and rebroadcast onto the HFC plant. The headend is where the CMTS is normally located.

HFC: Hybrid fiber-coaxial (cable network). Older CATV systems were provisioned using only coaxial cable. Modern systems use fiber transport from the headend to an optical node located in the neighborhood to reduce system noise. Coaxial cable runs from the node to the subscriber. The fiber plant is generally a star configuration with all optical node fibers terminating at a headend. The coaxial cable part of the system is generally a trunk-and-branch configuration.

MAC layer: Media Access Control sublayer in the network stack. Read more about that later in this presentation.

MCNS: Multimedia Cable Network System Partners Ltd. The consortium behind the DOCSIS standard for cable modems.

Minislot: Basic timeslot unit used for upstream data bursts in the DOCSIS standard.

MSO: Multiple Service Operator. A cable TV service provider that also provides other services such as data and/or voice telephony.

QAM: Quadrature Amplitude Modulation. A method of modulating digital signals using both amplitude and phase coding. Used for downstream and can be used for upstream.

QPSK: Quadrature Phase-Shift Keying. A method of modulating digital signals using four phase states to code two digital bits per phase shift.

Ranging: The process of automatically adjusting transmit levels and time offsets of individual modems, in order to make sure the bursts coming from different modems line up in the right timeslots and are received at the same power level at the CMTS.

SID (Service ID): Used in the DOCSIS standard to defines a particular mapping between a cable modem (CM) and the CMTS. The SID is used for the purpose of upstream bandwidth allocation and class-of-service management.

Subscriber Unit (SU): An alternate term for cable modem.

Upstream: The data flowing from the CM to the CMTS.

Upstream frequency: The frequency used to transmit data from the CM to the CMTS. Normally in the 5-42 MHz range for US systems and 5-65 MHz for European systems.

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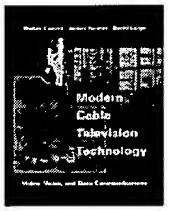

Modern Cable Television Technology: Video, Voice, and Data Communications by *Walter Cicoria, David Large*. Morgan Kaufman Publishers (December 1998). Hardcover - 873 pages.
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